

Vermont Appliance Efficiency and Water Conservation Standards

Preamble

The Vermont Appliance Efficiency and Water Conservation Standards are designed to ensure that the federal appliance and lighting efficiency standards in effect on January 19, 2017 will be in place in Vermont should the federal standards be repealed or voided. Implementation of these standards pursuant to Act 42 shall occur when any existing federal standards included in this rule is withdrawn, repealed or otherwise voided, or where a waiver of federal preemption is issued pursuant to 42 U.S.C. § 6306(b). When a standard that is included in this rule becomes enforceable, a person shall not sell or offer for sale in the State a new product subject to the standard unless the efficiency or water conservation of the new product meets or exceeds the requirements set forth in the standard.

The below listed definitions and minimum efficacy standard for General Service Lamps shall be in effect commencing on 1/1/2020.

General Service Lamp - Definitions

A general service lamp is a lamp that has an ANSI base; is able to operate at a voltage of 12 volts or 24 volts, at or between 100 to 130 volts, at or between 220 to 240 volts, or of 277 volts for integrated lamps (as defined in this section), or is able to operate at any voltage for non-integrated lamps (as defined in this section); has an initial lumen output of greater than or equal to 310 lumens (or 232 lumens for modified spectrum general service incandescent lamps) and less than or equal to 3,300 lumens; is not a light fixture; is not an LED downlight retrofit kit; and is used in general lighting applications. General service lamps include, but are not limited to, general service incandescent lamps, incandescent reflector lamps, compact fluorescent lamps, general service light emitting diode lamps, and general service organic light emitting diode lamps. GSLs include GSILs. (42 U.S.C. 6291(30)(BB)(i)(I))

The current definition of “general service incandescent lamp” is a standard incandescent or halogen type lamp that is intended for general service applications; has a medium screw base; has a lumen range of not less than 310 lumens and not more than 2,600 lumens or, in the case of a modified spectrum lamp, not less than 232 lumens and not more than 1,950 lumens; and is capable of being operated at a voltage range at least partially within 110 and 130 volts.

General service lamps do not include:

- Appliance lamps;
- Black light lamps;
- Bug lamps;
- Colored lamps;
- G shape lamps with a diameter of 5 inches or more as defined in ANSI C79.1–2002;
- General service fluorescent lamps;

- High intensity discharge lamps;
- Incandescent reflector lamps
- Infrared lamps;
- J, JC, JCD, JCS, JCV, JCX, JD, JS, and JT shape lamps that do not have Edison screw bases;
- Lamps that have a wedge base or prefocus base;
- Left-hand thread lamps;
- Marine lamps;
- Marine signal service lamps;
- Mine service lamps;
- MR shape lamps that have a first number symbol equal to 16 (diameter equal to 2 inches) as defined in ANSI C79.1–2002, operate at 12 volts, and have a lumen output greater than or equal to 800;
- Other fluorescent lamps;
- Plant light lamps;
- R20 short lamps;
- Reflector lamps (as defined in this section) that have a first number symbol less than 16 (diameter less than 2 inches) as defined in ANSI C79.1–2002 and that do not have E26/E24, E26d, E26/50x39, E26/53x39, E29/28, E29/ 53x39, E39, E39d, EP39, or EX39 bases;
- S shape or G shape lamps that have a first number symbol less than or equal to 12.5 (diameter less than or equal to 1.5625 inches) as defined in ANSI C79.1–2002;
- Sign service lamps;
- Silver bowl lamps;
- Showcase lamps;
- Specialty MR lamps;
- T shape lamps that have a first number symbol less than or equal to 8 (diameter less than or equal to 1 inch) as defined in ANSI C79.1–2002, nominal overall length less than 12 inches, and that are not compact fluorescent lamps (as defined in this section);
- Traffic signal lamps.

Appliance lamp means any lamp that—

- (1) Is specifically designed to operate in a household appliance and has a maximum wattage of 40 watts (including an oven lamp, refrigerator lamp, and vacuum cleaner lamp); and
- (2) When sold at retail, is designated and marketed for the intended application, with
 - (i) The designation on the lamp packaging; and
 - (ii) Marketing materials that identify the lamp as being for appliance use.

Black light lamp means a lamp that is designed and marketed as a black light lamp and is an ultraviolet lamp with the highest radiant power peaks in the UV–A band (315 to 400 nm) of the electromagnetic spectrum.

Bug lamp means a lamp that is designed and marketed as a bug lamp, has radiant power peaks above 550 nm on the electromagnetic spectrum, and has a visible yellow coating.

Colored lamp means a colored fluorescent lamp, a colored incandescent lamp, or a lamp designed and marketed as a colored lamp with either of the following characteristics (if multiple modes of operation are possible [such as variable CCT], either of the below characteristics must be

maintained throughout all modes of operation):

- (1) A CRI less than 40, as determined according to the method set forth in CIE Publication 13.3 (incorporated by reference; see § 430.3); or
- (2) A CCT less than 2,500 K or greater than 7,000 K.

Colored fluorescent lamp means a fluorescent lamp designated and marketed as a colored lamp and not designed or marketed for general illumination applications with either of the following characteristics:

- (1) A color rendering index (CRI) less than 40, as determined according to the method set forth in CIE Publication 13.3 (incorporated by reference; see §430.3); or
- (2) A correlated color temperature less than 2,500K or greater than 7,000K as determined according to the method set forth in IES LM-9 (incorporated by reference; see §430.3).

Colored incandescent lamp means an incandescent lamp designated and marketed as a colored lamp that has—

- (1) A CRI of less than 50, as determined according to the test method given in CIE 13.3 (incorporated by reference; see §430.3); or
- (2) A correlated color temperature of less than 2,500K, or greater than 4,600K, where correlated temperature is computed according to the “Computation of Correlated Color Temperature and Distribution Temperature,” Journal of the Optical Society of America, (incorporated by reference; see §430.3).

Compact fluorescent lamp (CFL) means an integrated or non-integrated single-base, low-pressure mercury, electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light; the term does not include circline or U-shaped lamps.

General service fluorescent lamp means any fluorescent lamp which can be used to satisfy the majority of fluorescent lighting applications, but does not include any lamp designed and marketed for the following non-general application:

- (1) Fluorescent lamps designed to promote plant growth;
- (2) Fluorescent lamps specifically designed for cold temperature applications;
- (3) Colored fluorescent lamps;
- (4) Impact-resistant fluorescent lamps;
- (5) Reflectorized or aperture lamps;
- (6) Fluorescent lamps designed for use in reprographic equipment; and
- (7) Lamps primarily designed to produce radiation in the ultra-violet region of the spectrum.

General service light-emitting diode (LED) lamp means an integrated or nonintegrated LED lamp designed for use in general lighting applications (as defined in this section) and that uses light emitting diodes as the primary source of light.

General service organic light-emitting diode (OLED) lamp means an integrated or non-integrated OLED lamp designed for use in general lighting applications (as defined in this section) and that uses organic light-emitting diodes as the primary source of light.

Incandescent reflector lamp (commonly referred to as a reflector lamp) means any lamp in which light is produced by a filament heated to incandescence by an electric current, which: contains an inner reflective coating on the outer bulb to direct the light; is not colored; is not designed for rough or vibration service applications; is not an R20 short lamp; has an R, PAR, ER, BR, BPAR, or similar bulb shapes with an E26 medium screw base; has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts; has a diameter that exceeds 2.25 inches; and has a rated wattage that is 40 watts or higher.

Infrared lamp means a lamp that is designed and marketed as an infrared lamp; has its highest radiant power peaks in the infrared region of the electromagnetic spectrum (770 nm to 1 mm); has a rated wattage of 125 watts or greater; and which has a primary purpose of providing heat.

Integrated lamp means a lamp that contains all components necessary for the starting and stable operation of the lamp, does not include any replaceable or interchangeable parts, and is connected directly to a branch circuit through an ANSI base and corresponding ANSI standard lamp holder (socket).

LED Downlight Retrofit Kit means a product designed and marketed to install into an existing downlight, replacing the existing light source and related electrical components, typically employing an ANSI standard lamp base, either integrated or connected to the downlight retrofit by wire leads, and is a retrofit kit. LED downlight retrofit kit does not include integrated lamps or non-integrated lamps.

Left-hand thread lamp means a lamp with direction of threads on the lamp base oriented in the left-hand direction.

Light fixture means a complete lighting unit consisting of light source(s) and ballast(s) or driver(s) (when applicable) together with the parts designed to distribute the light, to position and protect the light source, and to connect the light source(s) to the power supply.

Marine lamp means a lamp that is designed and marketed for use on boats and can operate at or between 12 volts and 13.5 volts.

Marine signal service lamp means a lamp that is designed and marketed for marine signal service applications.

Medium screw base means an Edison screw base identified with the prefix E-26 in the “American National Standard for Electric Lamp Bases”, ANSI/IEC C81.61-2003, published by the American National Standards Institute. Appliance lamp means any lamp that—

- (1) Is specifically designed to operate in a household appliance and has a maximum wattage of 40 watts (including an oven lamp, refrigerator lamp, and vacuum cleaner lamp); and
- (2) When sold at retail, is designated and marketed for the intended application, with
 - (i) The designation on the lamp packaging; and
 - (ii) Marketing materials that identify the lamp as being for appliance use.

Mine service lamp means a lamp that is designed and marketed for mine service applications.

Modified spectrum means, with respect to an incandescent lamp, an incandescent lamp that—

- (1) Is not a colored incandescent lamp; and
- (2) When operated at the rated voltage and wattage of the incandescent lamp—
 - (A) Has a color point with (x,y) chromaticity coordinates on the C.I.E. 1931 chromaticity diagram, figure 2, page 3 of IESNA LM-16 (incorporated by reference; see § 430.3) that lies below the black-body locus; and
 - (B) Has a color point with (x,y) chromaticity coordinates on the C.I.E. 1931 chromaticity diagram, figure 2, page 3 of IESNA LM-16 (incorporated by reference; see § 430.3) that lies at least 4 MacAdam steps, as referenced in IESNA LM-16, distant from the color point of a clear lamp with the same filament and bulb shape, operated at the same rated voltage and wattage.

Non-integrated lamp means a lamp that is not an integrated lamp.

Organic light-emitting diode or *OLED* means a thin-film light-emitting device that typically consists of a series of organic layers between 2 electrical contacts (electrodes).

Other fluorescent lamp means low pressure mercury electric-discharge sources in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light and include circline lamps and include double-ended lamps with the following characteristics: Lengths from one to eight feet; designed for cold temperature applications; designed for use in reprographic equipment; designed to produce radiation in the ultra-violet region of the spectrum; impact-resistant; reflectorized or aperture; or a CRI of 87 or greater.

Pin base lamp means a lamp that uses a base type designated as a single pin base or multiple pin base system.

Plant light lamp means a lamp that is designed to promote plant growth by emitting its highest radiant power peaks in the regions of the electromagnetic spectrum that promote photosynthesis: Blue (440 nm to 490 nm) and/or red (620 to 740 nm), and is designed and marketed for plant growing applications.

R20 incandescent reflector lamp means a reflector lamp that has a face diameter of approximately 2.5 inches, as shown in figure 1(R) on page 7 of ANSI C79.1-1994 (incorporated by reference; see §430.3).

R20 short lamp means a lamp that is an R20 incandescent reflector lamp that has a rated wattage of 100 watts; has a maximum overall length of 3 and 5/8, or 3.625, inches; and is designed, labeled, and marketed specifically for pool and spa applications.

Rated voltage with respect to incandescent lamps means:

- (1) The design voltage if the design voltage is 115 V, 130 V or between 115V and 130 V;
- (2) 115 V if the design voltage is less than 115 V and greater than or equal to 100 V and the lamp can operate at 115 V; and
- (3) 130 V if the design voltage is greater than 130 V and less than or equal to 150 V and the lamp can operate at 130 V.

Reflector lamp means a lamp that has an R, PAR, BPAR, BR, ER, MR, or similar bulb shape as defined in ANSI C78.20–2003 (incorporated by reference; see § 430.3) and ANSI C79.1–2002 (incorporated by reference; see § 430.3) and is used to provide directional light.

Showcase lamp means a lamp that has a T shape as specified in ANSI C78.20–2003 (incorporated by reference; see § 430.3) and ANSI C79.1–2002 (incorporated by reference; see § 430.3), is designed and marketed as a showcase lamp, and has a maximum rated wattage of 75 watts.

Sign service lamp means a vacuum type or gas-filled lamp that has sufficiently low bulb temperature to permit exposed outdoor use on high speed flashing circuits, is designed and marketed as a sign service lamp, and has a maximum rated wattage of 15 watts.

Silver bowl lamp means a lamp that has an opaque reflective coating applied directly to part of the bulb surface that reflects light toward the lamp base and that is designed and marketed as a silver bowl lamp.

Specialty MR lamp means a lamp that has an MR shape as defined in ANSI C79.1–2002 (incorporated by reference; see § 430.3), a diameter of less than or equal to 2.25 inches, a lifetime of less than or equal to 300 hours, and that is designed and marketed for a specialty application.

Traffic signal lamp means a lamp that is designed and marketed for traffic signal applications and has a lifetime of 8,000 hours or greater.

Minimum Efficacy Standards for General Service Lamps

The minimum efficacy standard for general service lamps shall be 45 lumens per watt when tested in accordance with 10 C.F.R. § 430.23(gg) as that provision appears in this rule.